

## **DECLARATION OF DONALD ALLEN PILE**

I, DONALD ALLEN PILE, do hereby declare and say as follows:

1.

I am an employee of Remington Arms Co., Inc. ("REMINGTON"), a subsidiary of RA Brands, LLC ("RA BRANDS"). I am over the age of majority and suffer from no disability that would disqualify me from testifying under oath.

2.

This Affidavit is made based on my own personal knowledge and based on knowledge I have gained from my employment at REMINGTON.

3.

I have a Masters of Science degree in Chemistry obtained from University of Arkansas in Little Rock, Arkansas, on 21 December 2000.

4.

I have been employed with REMINGTON from 19 October 1998 until the present. During my tenure with REMINGTON, I have been employed in the following capacities: Explosives Technician, Chemist, and Research Chemist.

5.

I am presently employed by REMINGTON in the capacity of Research Chemist. In this capacity, I am responsible for conducting research, analysis, synthesis, and experimentation on substances, for such purposes as product and process development and application, quantitative analysis, and improvement of analytical methodologies at the Remington Ammunition Plant in Lonoke, Arkansas.

6.

REMINGTON is engaged in the business of research, development, and sale of small arms ammunition. At REMINGTON, I have been directly involved in the research and development of numerous types of small arms ammunition. I have sought intellectual property protection for such ammunition. One result of this effort resulted in U.S. Patent Application

10/764,246, of which I am a named inventor. My familiarity with small arms ammunition is not limited to these efforts.

7.

I have carefully studied U.S. Patent No. 6,478,903 B1 to *John, Jr. et al.* ("*John*"), issued November 12, 2002. I am named as a co-inventor in *John* and I am familiar with each of the primer mixes disclosed therein.

8.

I and my co-inventors in *John* developed the disclosed primer mixes for use in small arms ammunition. We developed several primer mixes with one goal being to obtain a stable, non-toxic primer mix having ballistic properties that were comparable to lead styphnate-based primers.

9.

The primer mixes in *John* are not intended for use as or with delay compositions. In small arms ammunition, it is critical that the round fire nearly simultaneously with trigger pull. Modern primer compositions to my knowledge have detonation velocities of at least 4500 meters per second to ensure the round fires nearly simultaneously with trigger pull. To my knowledge, delay compositions are not used in small arms primer compositions because the resultant delay between trigger pull and firing would result in extremely unsafe firing conditions.

10.

I have carefully studied U.S. Patent No. 5,654,520 to *Boberg et al.* ("*Boberg*"), issued August 5, 1997. I understand the technology in *Boberg* because of my knowledge and experience in working with small arms ammunition.

11.

*Boberg* discloses delay charges for a detonator. *Boberg* describes the invention as useful in several applications, including start charges, firing charges, transfer charges, with a "main use" as a delay charge (col. 2, lines 31-34). The "suitable burn rate" for the invention is described as "between 10 to 200 mm/s" (col. 2, lines 34-36).

12.

I have reviewed the example charges listed in columns 4-6 of *Boberg* and the burn rates associated therewith. Upon reviewing the burn rates, I notified Mr. C. Keith Montgomery, outside patent counsel for REMINGTON, that there appeared to be errors in the data listed in Examples 2, 4 and 5 of *Boberg*. Mr. Montgomery provided me with a copy of EP 0 599 792 B1, which he informed me is a publication document of the Swedish priority document (SE 9203571) for *Boberg*.

13.

I have reviewed the numerical values listed in Examples 2, 4 and 5 in EP 0 599 792 B1. In my opinion, the numerical values in Examples 2, 4 and 5 of EP 0 599 792 B1, which are measured in millimeters per second, are correct. I believe the values in the corresponding Examples 2, 4 and 5 of *Boberg*, which are measured in meters per second, are typographical errors that should instead be measured in millimeters per second.

14.

I base my conclusion in paragraph 13 in part on *Boberg's* explicit citation of a "suitable burn rate" as falling in the range of "between 10 to 200 mm/s" (col. 2, lines 34-36). Measuring the data in Examples 2, 4 and 5 of *Boberg* in meters per second would place the experimental data far outside of *Boberg's* "suitable" range of 10-200 millimeters per second.

15.

My belief that the data in Examples 2, 4 and 5 of *Boberg* should instead be measured in millimeters per second is reinforced by the discrepancy in data between EP 0 599 792 B1 and *Boberg*.

16.

My belief that the data in Examples 2, 4 and 5 of *Boberg* should instead be measured in millimeters per second is further reinforced by *Boberg's* disclosure of "burn rates," which are typically measured in millimeters per second. "Burning" is deflagration, which occurs relatively slowly, as opposed to detonation, which occurs relatively quickly. Detonation velocities are associated with primer mixes, and are typically measured in meters per second.

17.

If my conclusion in paragraph 13 is correct, the fastest burn rate obtained in the *Boberg* examples is found in Example 2, which discloses a burn rate of 100 millimeters per second. A burn rate of 100 millimeters per second is typical of delay charges and is several orders of magnitude too slow for use in a small arms primer mix such as is disclosed in *John, Jr.*

18.

I have carefully studied U.S. Patent No. 4,853,052 to *Calsson et al.* ("*Calsson*"), issued August 1, 1989. *Calsson* discloses pyrotechnical charges. I understand the technology in *Calsson* because of my knowledge and experience in working with small arms ammunition.

19.

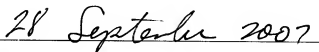
*Calsson* discloses an ignition charge including bismuth trioxide. I have reviewed the example charges listed *Calsson's* Tables 1 and 2. The fastest example burn rate obtained in the *Calsson* patent is found in Table 2, which discloses a burn rate of 50 millimeters per second. A burn rate of 50 millimeters per second is several orders of magnitude too slow for use in a small arms primer mix. *Calsson* also describes a possible range of burn rates between "3 and 150 mm/sec." (col. 2, lines 3-5), which is also several orders of magnitude too slow for use in a small arms primer mix such as is disclosed in *John, Jr.*

20.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

FURTHER DECLARANT SAYETH NAUGHT.

  
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Donald Allen Pile

  
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Date